Bonneville Power AdministrationPower AdministrationAdministration
Fish and Wildlife Program FY98 Proposal Form

How this form is structured

There are ten major sections to this form. Sections 1 through 5 are database-style fields in which brief, specific information is being sought. These sections include: General Administrative Information; Key Words; Objectives, Tasks and Schedules; Relationship to Other Bonneville Projects; and Budget. Type just above the lines, or in the appropriate areas in the tables. If more rows are needed in a table, press Alt-Insert.

Sections 6 through 10 accept a narrative format in which more open-ended questions are asked and you may respond at length in paragraph form. Descriptions are provided on the form. These sections include: Abstract, Description, Relationships to Other Projects, Personnel, Information/Technology Transfer. Replace the "Type here..." text with your own.

Steps to complete the form

1. First, read the Guidelines to Proposals.
1. Second, save this form. For ongoing projects, use your project number.WPD (example: 8909900.WPD). For new proposals, use a filename other than BLANK.WPD, preferably your agency acronym and your initials (example: NMFSWS1.WPD).
2. Fill in all fields in the first 5 sections, using arrow keys or a mouse to move from one field to the next. Then fill in narrative input areas, pressing down arrow to advance.
3. Print the completed document.
4. Save the document to diskette and mail both paper and diskette to:
   Bonneville Power Administration - EW
   ATTN..: Connie Little
   FY98 Proposals
   P.O. Box 3621
   Portland OR 97208-3621

Call Jim Middaugh at the Northwest Power Planning Council (503) 222-5161 or (800) 222-3355 or E-mail middaugh@nwppc.org if you have additional questions.
Proposals must be received to Bonneville by 5pm PST on Wednesday, December 24, 1997. Late proposals will not be reviewed for FY98 funding. This information will be the only material submitted for independent scientific review. It is essential that the relevant information be provided completely but concisely.

Section 1. General administrative information

Title of project. 75 characters or less; do not include the contractor name or acronym; use abbreviations if appropriate; start with action verbs, i.e., "Evaluate Coho...", not "Evaluation of Coho".

Restore in-stream habitat for salmonids on Goat Creek, a tributary to the Methow River

Bonneville project number, if an ongoing project n/a

Business name of agency, institution or organization requesting funding
U.S. Fish and Wildlife Service

Business acronym (if appropriate) USFWS

Proposal contact person or principal investigator:

Name	Kate Terrell
Mailing Address	P.O. Box 1157
City, ST Zip	Moses Lake, WA 98837
Phone	(509) 765-6125
Fax	(509) 765-9043
Email address	Kate_Terrell@mail.FWS.Gov

Subcontractors. List other agencies or entities that will receive funding under this project, either through sub-contracts managed by the project sponsor or, where multiple agencies are involved as joint sponsors, through primary contracts managed by Bonneville. If another entity will be responsible for the long term maintenance of the project, identify them here.

List one subcontractor per row; to add more rows, press Alt-Insert from within this table

Organization	**Mailing Address**	**City, ST Zip**	**Contact Name**
NRCS	1251 S. 2nd Ave	Okanogan, WA 98840-9723	Randy Kelly
WDFW	P.O. Box 1118	Twisp, WA 98856	Lynda Hoffman
Pacific Watershed Institute	P.O. Box 332	Winthrop, WA 98862	Janette Smith
USFS	P.O. Box 579	Winthrop, WA 98862	Laurie Thorpe
Methow Institute Foundation	P.O. Box 97	Winthrop, WA 98862	John Hays
Construction			

contract will be determined through bids			

NPPC Program Measure Number(s) which this project addresses. Refer to 1994 Fish and Wildlife Program as amended in 1995; NPPC staff will proof this field and correct if necessary; separate multiple measure numbers with commas.
7.6, 7.6A, 7.6B, 7.6C.2, 7.6C.4, 7.6C.5, 7.6D, 7.7, 7.7A.1, 7.7A.4, 7.7A.57.8A.2,7.8G

NMFS Biological Opinion Number(s) which this project addresses. If the project relates to the Kootenai Sturgeon Biological Opinion, the NMFS Hydrosystem Operations Biological Opinion, or other Endangered Species Act requirements, enter the Action Number and Biological Opinion Title.

West Coast Steelhead Briefing Package, Steelhead Conservation Efforts: A Supplement to the Notice of Determination for West Coast Steelhead Under the Endangered Species Act

Other planning document references. If the project is called for in the National Marine Fisheries Service *Snake River Salmon Recovery Plan*, or in *Wy Kan Ush Me Wa Kush Wit*, the Anadromous Fish Restoration Plan of the Nez Perce, Umatilla, Warm Springs and Yakama tribes, in U.S. Forest Service or Bureau of Reclamation land management plans, or in local area sub-basin or watershed plans, or in other planning documents, provide the name of the plan and reference citation where the need is identified.

If the project type is "Watershed" (see Section 2), reference any demonstrable support from affected agencies, tribes, local watershed groups, and public and/or private landowners, and cite available documentation.

Goat Creek Watershed Analysis, Washington State Salmonid Stock Inventory: Bull trout/Dolly Varden, 1992 Washington State Salmon and Steelhead Stock Inventory, Conservation Assessment for Inland Cutthroat Trout, Draft Mid-Columbia Tributary Compensation Plan, Steelhead Conservation Efforts: A Supplement to the Notice of Determination for West Coast Steelhead Under the Endangered Species Act, Multi-Objective River Corridor Plan for the Methow Basin .

The following organizations and individuals support the restoration of Goat Creek. For documentation, please see letters of support.

Washington Department of Fish and Wildlife, Natural Resource Conservation Service, Pacific Watershed Institute, U.S. Forest Service, Methow Institute Foundation, Private Land Owners: Phil Heitman, Edward Fruhling, and Walt Foster.

Subbasin. List subbasin(s) where work is performed. Use commas to separate multiple subbasins. Coordination projects or those not affecting particular subbasins may omit this field.

Short description. Describe the project in a short phrase (less than 250 characters). Give information that is not in the title. If possible start this field with an action verb (protect, modify, develop, enhance, etc.) rather than a noun (this project protects). There is room for a more detailed project abstract later in the narrative section, so please keep this answer short.

Restore and enhance 1 ½ miles of in-stream and riparian habitat for steelhead, chinook, bull trout and west slope cutthroat trout. This will be accomplished by re-establishing stream meanders, pools, stream cover, riparian vegetation and replacing a foot bridge. The entire project is located on private land and is bordered by the Okanogan National Forest. The U. S. Forest Service is scheduled restore the portion of Goat Creek on Forest Service Land in FY99. With the coordination of this project with that of the Forest Service, the entire drainage will be restored.

Section 2. Key words

For identifying and sorting, mark key words below that most specifically describe this project. Under each heading (Programmatic Categories, Activities, Project Types), find the **one** item that most applies to your project, and mark it with an X in the Mark column. If other items in the same heading also apply, mark them with a plus sign or asterisk.

Mark	Programmatic Categories	Mark	Activities	Mark	Project Types
X	Anadromous fish	X	Construction	X	Watershed
	Resident fish		O & M		Biodiversity/genetics
	Wildlife		Production		Population dynamics
	Oceans/estuaries		Research		Ecosystems
	Climate		Monitoring/eval.		Flow/survival
	Other		Resource mgmt		Fish disease
			Planning/admin.		Supplementation
			Enforcement		Wildlife habitat en-
			Acquisitions		hancement/restoration

Other keywords. If there are other key words that would help identify your project, enter them below, separated by commas; example key words: DNA, stock identification, life history, sampling, modeling, nutrient dynamics, predation, hydrodynamics, gas bubble disease, disease names, hatchery-wild interactions, ecological interactions.

Meander Reconstruction, Habitat Restoration, Habitat Enhancement, Watershed Approach

Section 3. Relationships to other Bonneville projects

Describe any interdependencies with other projects funded under the Fish and Wildlife Program. Don't include general relationships to other projects, but target those that depend on this project being funded, or vice versa. There is room in Section 7 below to comment on other relationships or to describe these more fully.

Project #	Project title/description	Nature of relationship
N/A		

Section 4. Objectives, tasks and schedules

This section has three parts: a) Objectives and tasks table, b) Objective schedules and costs table, c) other schedule fields. Instructions for each part follow the headings.

Objectives and tasks

Briefly describe measurable objectives and the tasks needed to complete each objective. Use Column 1 to assign numbers to objectives (for reference in the next table), and Column 3 to assign letters to tasks. Use Columns 2 and 4 for the descriptive text. Objectives do not need to be listed in any particular order, and need only be listed once, even if there are multiple tasks for a single objective. List only one task per row; if you need more rows, press Alt-Insert from within this table.

Obj 1,2, 3	Objective	Task a,b,c	Task
1	Complete Watershed Assessment	a	Assess the watershed within private ownership
		b	Combine finding of private land assessment with the assessment completed on Forest Service land
2	Develop a restoration plan for the project site	a	Survey project site
		b	Comply with ESA, NEPA, SHiPO, county, state and federal agencies
		c	Develop designs for the restoration project
3	Implement the restoration plan	a	Reconstruct Meanders and install in-stream habitat and re-establish riparian vegetation.
4	Develop and implement a monitoring plan	a	Develop monitoring criteria including snorkel surveys, photo points and cross sections.
		b	Install monitoring points

		c	implement

Objective schedules and costs

Partition overhead, administrative, support, and any other common costs shared among objectives. The cost percentages from all objectives should total 100%. Enter just the objective numbers from Column 1 in the above table. Enter start and end dates for each objective using the mm/yyyy format (e.g. 05/2002 for May, 2002).

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	02/1998	03/1998	8.6
2	04/1998	06/1998	9.7
3	07/1998	10/1998	60.7
4	11/1998	09/2002	21.0

Schedule constraints. Identify any constraints that may cause schedule changes. Describe major milestones if necessary.

The in-stream work window developed by Washington Department of Fish and Wildlife for this area is July 01- August 31

Completion date. Enter the last year that the project is expected to require funding.
FY 98

Section 5. Budget

This section has two tables: 1) FY98 budget by line item, and 2) Outyear costs. Instructions for each part follow the heading.

FY98 budget by line item

List FY98 budget amounts for each category. If an item needs more explanation, provide it in the Note column. If the project uses PIT tags, include the cost ($2.90/tag). **Be sure to enter a total on the last line: this is the amount of your budget request.**

Item	Note	FY98
Personnel	To be supplied by USFWS and NRCS $34,200	
Fringe benefits	To be supplied by USFWS and NRCS $8,550	
Supplies, materials, non-expendable property		20,000
Operations & maintenance		
Capital acquisitions or improvements (e.g. land,		

buildings, major equip.)		
PIT tags	# of tags:	
Travel	To be supplied by NRCS and USFWS $6,000	
Indirect costs		
Subcontracts		180,000
Other	monitoring: To be supplied by USFWS and NRCS $15,600 per year	
TOTAL		200,000

** This request for funding is for on the ground restoration. Funds for planning, design, salary of the interdisciplinary team, and monitoring will be provided by U. S. Fish and Wildlife Service and the Natural Resource Conservation Service.

Outyear costs

List budget amounts for the next four years, and the estimated percentage of those costs for operations and maintenance (O&M).

Outyear costs	**FY1999**	**FY2000**	**FY01**	**FY02**
Total budget monitoring	0	0	0	0
O&M as % of total	0	0	0	0

Section 6. Abstract

A condensed description to briefly convey to other fish and wildlife scientists, managers and non-specialists the background, objectives, approach and expected results. **In under 250 words,** include the following:

a. Specific items in any solicitation being addressed
b. Overall project goals and objectives
c. Relevance to the 1994 Columbia Basin Fish and Wildlife Program (benefit to fish and wildlife)
d. Methods or approach based on sound scientific principles
e. Expected outcome and time frame
f. How results will be monitored and evaluated

The lower 11/2 miles of Goat Creek was channelized in the last 1970's (Bob Steele, WDFW personal communication) thus leaving minimal habitat for salmonids. The goal of this project is to re-establish meanders, cover, pools and riparian vegetation within this reach befitting spring chinook, steelhead, west slope cutthroat, and bull trout. The project will be designed using Rosgen style techniques. A development plan will be developed through an interdisciplinary team. The team is comprised of two fisheries biologists, a fluvial geomorphologist and an engineer. All in-stream work should be accomplished by December 31, 1998. Revegetation of the stream banks will occur in spring of 1999. Monitoring will be accomplished by establishing cross sections, photo monitoring points and stream surveys.

Section 7. Project description

This full description of the project should be in sufficient detail to include the following information under headings a through g **(maximum of 10 pages for entire project description)**:

a. Technical and/or scientific background. The overall problem should be clearly identified with background history and scientific literature review, if a research project. Location should be specific, if relevant. Goals and objectives of the 1994 Fish and Wildlife Program (FWP), NMFS Biological Opinion, or other plans in relation to the proposed project should be stated and described in some detail. Indicate whether the project mitigates losses in place, in kind, or if out-of-kind mitigation is being proposed.

Show how the proposed work is a logical component of an overall conceptual framework or model that integrated knowledge of the problem. The most significant previous work history related to the project, including work of key project personnel on any past or current work similar to the proposal, should be reviewed. All work should be adequately referenced and listed at the end of this field.

The 23,000 acre watershed of Goat Creek lies entirely in Okanogan County. The watershed includes the ridges, side slope and valleys drained by Goat Creek and it's tributaries. The peaks surrounding the head waters of Goat Creek rise more than 8,000 feet above sea-level and join the Methow River at an elevation of 2100 feet.

The Goat Creek watershed lies mostly on national forest land. About 300 acres of agricultural lands and private homes are clustered at the mouth of the long, U-shaped valley.

In FY 99 the Forest Service is planning on completing restoration on their portion of Goat Creek. The lower mile and a half of Goat Creek was severely channelized in the late 1970's (pers. Com. Bob Steele, WDFW), leaving a channel with large cobble deposition and little to no habitat for steelhead, chinook, bull trout and west slope cutthroat as well as resident populations.

Goat Creek has been identified by Washington Department of Fish and Wildlife, U.S. Forest Service and U. S. Fish and Wildlife Service as drainage that is significant to establishing population strong holds for spring chinook, steelhead, bull trout and west slope cutthroat (pers. com. Lynda Hoffmann, WDFW, and Jennifer Molsworth, USFS.) In streams of Washington and Oregon, habitat simplification has lead to a decrease in the diversity of anadromous salmonid species complex (Bisson and Sedall 1984; Reeves et al. 1993). Habitat simplification is contributed to by activities such as channelization, timber harvest, grazing and development (Frissel 1992). These activities can result in a decrease in the number and quality of pool habitats (Sullivan et al. 1987). Reduction of wood in the stream channel, generally reduces pool quality and quantity, alters stream shading which can affect stream temperatures and nutrient input, and can eliminate critical stream habitat

needed for both vertebrate and invertebrate populations (NMFS, 1996). Constricting channels through channelization, culverts, and bride approaches can reduce stream meandering, pool maintenance, and preclude passage of anadromous salmonids (Forest Ecosystem Management Assessment Team 1993).

High quality habitat is essential for the recovery of the Columbia River Basin salmonid populations. A primary characteristic of high quality aquatic ecosystems is an abundance of large pool habitats (NMFW, 1996). In Goat Creek, the number of large, deep pools have decreased due to channelization. This trend exists throughout Washington, in National Forests within the range of the northern spotted owl, there has been a 58 percent decrease in the number of large deep pools (Forest Ecosystem Management Assessment Team 1993). Primary reasons for the loss of pools are: filling by sediment (Megahan 1982), loss of pool-forming structures such as large wood and boulders (Sullivan et al. 1987), and loss of sinuosity by channelization (Benner 1992; Furniss et al. 1991).

An interdisciplinary team (IDT) comprised of the following people will design and implement the restoration project: Kate Terrell, Fish and Wildlife Biologist (USFWS), Jeff Rose, Engineer (USFWS), Mark Schulur, Fish Biologist (NRSC), Barry Sutherland, Fluvial Geomorphologist (NRCS), and Lynda Hoffman, Habitat Biologist (WDFW). The IDT will survey and evaluate the project area early spring of 1998. This will be a Rosgen style survey analyzing bed load, stream type, geomorphology, channel condition, in-stream habitat, riparian vegetation, and over all watershed condition. This analysis will be combined with the Forest Service watershed analysis. Utilizing all of the available information a restoration plan will developed. Once completed, the meander re-construction will be implemented.

b. Proposal objectives. Specific, measurable objectives or outcomes for the project should be presented concisely in a numbered list. Research proposals must concisely state the hypotheses and assumptions necessary to test these. Non-scientific projects must also ‘state their objectives. Clearly identify any products (reports, structures, etc.) that would result from this project. For example, an artificial production program may state the species composition and numbers to be produced, their expected survival rates, and projected benefits to the FWP. A land acquisition proposal may state the conservation objectives and value of the property, the expected benefits to the FWP, and a measurable goal in terms of production. Methods and tasks (in heading e, below) are to be linked to these objectives and outcomes (by number).

MAIN GOALS: Meander re-construction and habitat restoration of the lower mile and a half of Goat Creek. To improve habitat quality that will allow greater juvenile and adult survival at each freshwater stage and thus may result in more offspring surviving to begin migration to the ocean.

1. Complete a survey of the project site and combine this information with the that of the Forest Service Watershed Analysis.

2. Develop a restoration plan for the project site.
3. Coordinate with private land owners and the Forest Service on our project designs.
The IDT feel it is necessary for the restoration plan to be consistent with the Forest Service plan for the upper reaches. The IDT and the Forest Service are striving to achieve a holistic watershed restoration approach.

4. Summit applications and biological assessment for compliance with state, local and federal permits.

5. Install in-stream structures.

6. Revegetate riparian area.

7. Establish a monitoring plan.

8. Establish monitoring points.

9. Develop a slide presentation for educational presentations.

c. Rationale and significance to Regional Programs. The rationale behind the proposed project should be presented and project objectives and hypotheses related as specifically as possible to the FWP objectives and measures or to other plans. You should make a convincing case for how the proposed work will further goals of the FWP. Relevant projects in progress in the Columbia Basin and elsewhere should be listed and discussed in relation to the proposed project. Arrangements should be identified and documented for cooperation and synergistic relationships among the proposed project, *other project proposals,* and existing projects. Any particularly novel ideas or contributions offered by the proposed project should be highlighted and discussed.

The Washington State Salmonid Stock Inventory (SASSI) classifies the bull trout stocks in Goat Creek as depressed. This bull trout stock is considered distinct based on its thermal and geographical isolation from other bull trout. This stock has resident and fluvial life history components. (SASSI, 1997).

SASSI also list spring and summer chinook as depressed for the Methow River Drainage (SASSI,1992). In addition to chinook, steelhead have been listed as endangered under the Endangered Species Act as endangered. Along with the mainstem Columbia River Dams, land use practices and water allocations, loss of habitat is recognized as factor in the decreasing salmonid populations (NMFS 1996, USFS 1995).

Through the restoration of in-stream habitat and riparian vegetation in this reach of Goat Creek, a migrational corridor will be re-established for steelhead and bull trout in addition to providing rearing habitat for spring chinook. The upper reaches of Goat Creek provide habitat for a depressed population of bull trout as well as steelhead (USFS, 1995). It is necessary to re-establish this corridor to prevent genetic isolation.

This project will further the goals of the FWP by improving habitat degradation within the Methow River watershed. It will improve the quality of habitat in Goat Creek and thus allow greater juvenile and adult survival at each freshwater stage and may result in more offspring surviving to begin migration to the ocean.

In addition to the benefits to Goat Creek, this project will be used as a demonstration site to promote bio-engineering and habitat restoration. Results of this project will be presented at a number of workshops to educate local land owners on the benefits of restoration and how to work within the Endangered Species Act. In addition, this project will serve a an outdoor class room for high school students in Twisp and Pateros. These schools participate in the Columbia River Consortium. This Consortium provides students an opportunity for hands on experience in natural resources.

The project will benefit salmonids along with many other species is the area. These include grizzly bear, gray wolf, wolverine, northern spotted owl, lynx, mule deer, and ruffed grouse.

The Goat Creek Restoration Project is a cooperative effort between U. S. Fish and Wildlife Service, Natural Resource Conservation District, Washington Department of Fish and Wildlife, The Methow Institute Foundation, U. S. Forest Service, and the land owners of lower Goat Creek (see letters of support).

d. Project history (for continuing projects). If the project is continuing from a previous year, the history must be provided. This includes projects that historically began as a different numbered projects (identify number *and short title*). For continuing projects, the proposal primarily will be an update of this section. List the following:

- project numbers (if changed)
- project reports and technical papers
- summary of major results achieved
- adaptive management implications
- years underway (see attached spreadsheet)
- past costs (see attached spreadsheet)

This is a new project proposal

e. Methods. How the project is to be carried out based on sound scientific principles should be described (this is applicable to all types of projects). Include scope, approach, and detailed methodology. If methods are described in detail in another document, summarize here and cite reference. The methods should include, as appropriate, but not be limited to such items as:

- tasks associated specifically with objectives
- critical assumptions
- description of proposed studies, experiments, treatments or operations in the sequence that they are to be carried out
- any special animal care or environmental protection requirements
- any risks to habitats, other organisms, or humans
- justification of the sample size

- methods by which the data will be analyzed
- methods for monitoring and evaluating results
- kinds of results expected

Each proposer should complete the methods section with an objective assessment of factors that may limit success of the project and/or critical linkages of the proposal with other work (e.g., a smolt monitoring program, etc.).

1. Complete a survey of the project site and combine this information with that of the Forest Service Watershed Analysis.

a. A Rosgen style survey will be conducted looking at geomorphic characteristics including the following parameters:

1) Stream Description
2) Valley Morphology
3) Plan View Morphology
4) Channel Sinuosity
5) Channel Slope
6) Bed Features
7) Entrenchment Ratios
8) Width/Depth Ratio
9) Dominant Channel Materials
10) Gradient
11) Meander Width Ratio.

2. Once all of the survey data has been collected, a restoration plan will be developed. This plan will include the following problems:

a. Introduction of large woody debris into the system.
b. Re-establishing channel meanders.
c. Establish a high poll/riffle ratio.
d. Establish a lower width/depth ratio.
e. Increase cover.
f. Decrease stream gradient.
g. Increase stream stability.
h. Improve in-stream habitat for salmonids.
i. Improve riparian vegetation.

3. Designs will be developed to implement the restoration plan. These designs will by Rosgens style of bio-engineering. This will incorporate large woody debris, rock and vegetation.

4. Once the designs are complete, a coordination meeting will be held with the IDT, Forest Service and the local land owners. The IDT believe that it is necessary

for the Forest Service to be in concurrence with the designs and plans. This is necessary due to their proposed restoration project in FY 99. The IDT is striving for a holistic approach to watershed restoration.

5. Biological assessment on permits applications will be submitted to the state, local and federal agencies.

6. Construction will take place during the 1998 field season. Structures will include the following:

a. Replacement of the foot bridge.
b. Installation of root wad revetment.
c. Installation of rock veins and vortex weirs.
d. Installation sunken log habitat structures.
e. Re-sloping existing banks.
f. Establishing planting benches.

7. Establish a monitoring plan. This will include the following parameter:

a. Riparian vegetation.
b. Deposition pattern
c. Debris occurrence
d. Meander pattern
e. Sediment supply
f. Bed stability
g. Width/depth ratio

8. Establish monitoring points

9. Re-establish riparian vegetation. This will be accomplished by planting bare root stocks of black cotton wood, quaking aspen, willow sp., red-osier dogwood, snowberry, service berry and wild rose. All disturbed area will be reseed using native streambank grasses.

10. Develop a slide presentation for educational presentation.

f. Facilities and equipment. All major facilities and equipment to be used in the project should be described in sufficient detail to show adequacy for the job. The proposal should indicate whether there are suitable (based on contemporary standards) field equipment, vehicles, laboratory and office space and equipment, life support systems for organisms, and computers, for example. Any special or high-cost equipment to be purchased with project funds should be identified and justified. Reference to other proposals is allowed but note that limitations of those proposals could effect the evaluation of the ones citing them.

U.S. Fish and Wildlife Service and the Natural Resource Conservation Service will supply all materials necessary to preform the surveys and develop the restoration and monitoring plans. This proposal is a request for on the ground restoration materials and equipment need for installation of the project. A contractor will be hired to supply a walking excavator, two dump trucks, a trackhoe, a bull dozer, rock drill and other equipment necessary for construction of the structures. The IDT will work with the contractor to obtain all materials necessary for the project.

g. References. (Not included in 10-page limit for this section.) Provide complete citations to all publications referred to in Sections 6a-f. List in order: author(s), date, title, report number, publisher or agency, location. References will not be read by reviewers; the substance of any reference should be described in the text and the source cited. Sample citation:

> Rondorf, D.W., and K.F. Tiffan. 1997. Identification of the spawning, rearing and migratory requirements of fall chinook salmon in the Columbia River Basin. Annual Report 1995. DOE/BP-21078-5, Bonneville Power Administration, Portland, Oregon.

Benner, P. A. 1992. Historical reconstruction of the Coquille River and surrounding landscape. Section 3.2, 3.3 in: The action plan for Oregon costal wetlands, estuaries, and ocean waters. Near Costal Waters National Pilot Project. Environmental Protection Agency, 1988-1991. Portland, Oregon: Conducted by the Oregon Department of Environmental Quality.

Bisson, P. A. And seven coauthors, 1987. Large woody debris I forested streams in the Pacific Northwest: past, present, and future. In: Salo, E.O., T.W. Cundy, eds. Streamside management: forestry and fishery interactions. Contribution Number. 57. Seattle, Washington: University of Washington, Institute of Forest Resources. 143-190.

Bisson, P. A. And J. R. Seddell. 1984. Salmonid populations in streams in clearcut vs. Old-growth forest of western Washington. In: Meehan, W. R; Merrell, Jr., T. R. Hanley, T. A., eds. Fish and wildlife relationships in old-growth forest: Proceedings of the symposium. Asheville, NC: American Institute of Fisheries Research Biologist. 121-129.

Forest Ecosystem Management Assessment Team (FEMAT). 1993. Forest ecosystem management: an ecological, economic, and social assessment. Report published by the U. S. Department of Agriculture and five other federal agencies. July 1993.

Frisselll, C. A. 1992. Cumulative effects of land use on salmonid habitat in Southwest Oregon coastal streams. Oregon State University. Ph.D. Dissertation.

Furniss, M. J., T. D.Roelofs, and C. S. Yee. 1991. Road construction and maintenance. In: Influences of Forest and Rangeland Management on Salmonid Fishes and their Habitats. AFS Spec. Publ. 19:207-323.

Hoffman, L. 1997. Interviewed (telephone) by Kate Terrell. Washington Department of Fish and Wildlife. Twips, Washington.

Megahan, W. F. 1982. Channel sedimentation storage behind obstructions in forested drainages basins draining the granitic bedrock of the Idaho batholith. In: Swanson, (and others). Sediment budgets and routing in forested drainage basins. General Technical Report PNW-141. Portland, Oregon: USDA Forest Service, Pacific Northwest Research Station. 114-121.

Molesworth, J. 1997. Interviewed (telephone) by Kate Terrell. U.S. D. A. Forest Service. Methow Valley Ranger District. Winthrop, Washington.

National Marine Fisheries Service. 1996. Factors for Decline: A supplement to the notice of determination for west coat steelhead under the Endangered Species Act. Available from National Marine Fisheries Service. 525 NE Oregon St.-Suite 500, Portland, Oregon 97232. 55p.

Reeves, G.H., F.H. Everest, J.R. Seddell. 1993. Diversity of juvenile anadromous salmonid assemblages in basins in coastal Oregon, USA with different levels of timber harvest. Trans. Amer. Fish. Soc.

Rieman, B. E., J.D. McIntyre. 1993. Demographic and Habitat Requirements for Conservation of Bull Trout. General Technical Report INT-302. U.S.D.A. Forest Service, Intermountain Research Station. Ogden, Utah.

Steele, R. 1997. Interview (telephone) by Kate Terrell. Washington Department of Fish and Wildlife. Wenatchee, Washington.

Sullivan, K. T. And four coauthors. 1987. Stream channels: the link between forests and fish. In: Salo, E.O., T.W. Cundy, eds. Streamside management: forestry and fisheries interactions. Contribution Number. 57. Seattle, Washington: University of Washington, Institute of Forest Resources. 39-97.

Washington Department of Fish and Wildlife. 1993. Washington State Salmon and Steelhead Stock Inventory. Olympia, Washington.

Washington Department of Fish and Wildlife. 1996. Draft- Washington State Salmonid Stock Inventory: Bull trout/Dolly Varden. Olympia, Washington.

U.S.D.A. Forest Service. 1991. Stream Inventory Handbook Level I and II, (Hankin-Reeves Inventory)

U. S. D.A. Forest Service. 1995. Goat Creek watershed analysis and interim late successional reserve assessment. Okanogan National Forest, Methow Valley Ranger District. Winthrop, Washington.

Section 8. Relationships to other projects

Indicate how the project complements or includes collaborative efforts with other projects; put the work into the context of other work funded under the FWP. If the proposed project requires or includes collaboration with other agencies, organizations or scientists, or any special permitting to accomplish the work, such arrangements should be fully explained. If the relationship with other proposals is unknown or is in conflict with another project, note this and explain why.

This is not intended to duplicate the Relationships table in Section 3. Instead, it allows for more detailed descriptions of relationships, includes non-interdependent relationships, and includes those not limited to specific Bonneville projects.

The relationship to other BPA funded projects within the Methow River drainage is unknown.

This project is a cooperative effort between the U.S. Fish and Wildlife Service (USFWS), Natural Resource Conservation Service (NRCS), Washington Department of Fish and Wildlife (WDFW), the Methow Institute Foundation and the land owners of lower Goat Creek.

The USFWS and NRCS will provide all designs, develop restoration and monitoring plans, comply with permitting, NEPA and ESA, along with over seeing construction during the restoration activities. WDFW will provide technical assistance during all phases of the project. Methow Institute and the land owners will assist in revegetation efforts along with photo monitoring.

Section 9. Key personnel

Include names, titles, FTE/hours, and one-page resumes for key personnel (i.e. principal investigator, project manager), and describe their duties on the project. Emphasize qualifications for the proposed work. Resumes should include name, degrees earned (with school and date), certification status, current employer, current responsibilities, list of recent previous employment, a paragraph describing expertise, and up to five recent or especially relevant publications or job completions.

The interdisciplinary team is comprised of the following :

Kate Terrell is a fish and wildlife biologist with the U.S. Fish and Wildlife Service in Moses Lake, Washington. She received a bachelors degree in biology from the University of Oregon and a master degree in fisheries from University of South Carolina. She joined the U.S. Fish and Wildlife Service in 1992. Prior to joining USFWS she worked for Oregon Department of Fish and Wildlife and the Forest Service. Her current work focuses on habitat restoration in anadromous systems.

Currently, she is working with private land owners and other agencies in the Chewuch, Entiat, Methow rivers, Chumstick, Rattlesnake and Swale creeks to develop restoration plans and implement projects. During the last field season six of these projects were completed. These projects range from riparian fencing to Rosgen type root wad revetments.

Jeff Rose is a civil engineer with the U. S. Fish and Wildlife Service -Regional Office, in Portland, Oregon. He received his degree from Oregon State University. His duties focus on developing habitat restoration designs within a six state region. He has completed numerous courses in bio-engineering and has developed many designs that range from rock veins to Rosgen style root wad revetments.

W. Barry Sutherland is a Fluvial Geomorphologist with the Natural Resource Conservation Service. Barry is well schooled in Rosgen and Leopold techniques. He has been involved in restoration work for the past 15 years. During the summer of 1997, he designed and implement a meander reconstruction project on Asotin Creek in eastern Washington. This project is very similar to the proposed Goat Creek Restoration.

Mark Schulur is a fisheries biologist. During the past 20 years, he has worked for the Washington Department of Fisheries and the Natural Resource Conservation Service. Since 1994, he has work with Barry Sutherland to develop and implement restoration projects throughout Washington.

Section 10. Information/technology transfer

How will technology or technical information obtained from the project be distributed or otherwise implemented? Methods can include publication, holding of workshops, incorporation in agency standards or facilities, and commercialization.

Results from this project will be presented at workshops throughout eastern Washington. The focus of these workshops will be the private land owner. This project will be used as a demonstration site to teach landowners about the benefits of habitat restoration and working with the Endangered Species Act. In addition to the workshops, this project will be used by local schools as an outdoor classroom to teach students about watershed management. This will include aquatic, riparian, and up-land habitats.

Congratulations!

Thank you for completing the FY98 Proposal Form. Please print and save this file to diskette, and mail both to the address shown at the top of this document. To ensure a thorough review of your proposed work, this form will be screened for completeness. If it is not complete, it may be returned to you with a request for additional information.